



## Changes in the affect of infants before and after episodes of crying



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### ABSTRACT

This study examined the affect of infants just before the onset of crying and just after crying stopped. Two infants (between 7 and 14 months old) were observed longitudinally. In total, 102 crying episodes were analyzed. The infants displayed negative affect almost always just before starting to cry and soon after crying terminated. However, there were exceptions. Positive affect was observed. These were crying behaviors that the mother identified as “fake crying” or “emergence of fake crying”. These data indicate that, although normally infant affect just before and right after crying is negative, infants also can exhibit positive affect when they show fake crying. Infants who are capable of fake crying might communicate successfully with their caregivers.

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### 1. Introduction

Crying is essential for the survival of human infants. If infants could not cry, they would face great difficulty in letting their caregivers know their needs. Infant cries function both as a high profile signal (Adamson, 1996; Craig, Gilbert-MacLeod, & Lilley, 2000; Locke, 2006; Soltis, 2004; Zeskind & Lester, 2001), and as a means of communication (Chen, Green, & Gustafson, 2009; Zeifman, 2001).

Even today, infant crying is an issue of research concern (e.g., Cecchini et al., 2012; Tsuchiya, 2011; Whitney & Green, 2011), as there are not enough studies to shed light on the nature of crying (Kawakami, Takai, & Kawakami, 2012).

Crying is considered the most remarkable expression of negative emotions in infancy (Bell & Ainsworth, 1972; Mesman, Oster, & Camras, 2012). It appears that infants cry when they are distressed, such as with pain, hunger, anger, sadness, and so on. That is, infants are likely to express negative affect, taking the form of crying. Should we assume that infant affect always is negative when they exhibit crying behavior?

Infant crying is an everyday life experience (Barr, Hopkins, & Green, 2000), and has sometimes been perceived as “faking” (e.g., Wolff, 1969). Although there are few studies so far dealing with “fake crying” during infancy, Reddy (2007) reports that fake crying emerges at the age of eight or nine months by interviewing caregivers (Reddy, 1991). Saarni (2011) noted that fake crying is one of the noteworthy markers of infant emotional development in building social relationships. Nakayama (2010) observed longitudinally the development of infant crying behaviors, and concluded that infants are capable of fake crying by the end of their first year. Then, there is a question regarding infant affect: how would infant affect be when fake crying is observed? Would it be possible that “positive” affect might be observable when infants do fake crying?

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The present study focused on late infancy, a period in which fake crying has been observed (Nakayama, 2010). Late infancy also is considered to be a meaningful transition period for infant cognitive and emotional development (Emde & Gaensbauer, 1981), a period when infants begin to show significant changes, such as trying to control another person's attention and sharing interest with others (Rochat, 2001; Tomasello, 1995). Thus, it is worthwhile to examine how infant affect changes just before starting and after stopping crying during this period.

## 2. Methods

### 2.1. Participants

Participants were two Japanese girls, R (seven months old at the start of observations) and M (nine months old at the start of observations). These infants were observed longitudinally until R was 12 months old and M was 14 months old.

### 2.2. Procedure

The infants were observed during visits to their homes, which took place twice a month for six months. Each observation was recorded for about 60 min by two video cameras (Victor GR-D750 and Sony DCR-PC1) in a naturally occurring context. While observing the infant, primarily the mother–infant dyad was focused on. For infant R, her siblings (boys aged three and six years) were sometimes at home. However, this research placed stress on a natural occurring context, and consequently respected the siblings' presence.

### 2.3. Coding

Coding of behavior was carried out in two steps: (1) identify infant crying; (2) code infant affect just before it starts and just after it stops. Although a number of studies have attempted to define crying, there is little agreement on how crying and fussing can be clearly described. The present study included all vocal protests including fussing. Episodes of crying were defined as any crying sounds that continuously, or discontinuously lasted for more than 3 s. The interval between episodes was defined as a period of at least 15 s in which no crying sounds occurred.

Two coders independently identified and recorded crying episodes using videotape recordings. Coding was conducted by manually entering an applicable code into a text file. The percentage of inter-coder agreement was 96.00% for infant R and 92.00% for infant M. Seventy-two episodes (infant R) and 34 episodes (infant M) were identified by both coders. Of these episodes, however, four episodes for infant R were excluded from further analysis due to lack of clarity regarding the timeframe before the onset or after the end of crying. Eventually 68 episodes (infant R) and 34 episodes (infant M) were included in the subsequent analysis.

Next, the infants' affect just before and just after each crying episode was analyzed. The periods, 60 s before and 60 s after crying episode were divided into 5 s segments and infant's affect in each segment was coded using a 4-point scale: 4 (*negative: i.e., full distress, grimace accompanied by vocalizations*); 3 (*somewhat negative: i.e., minimal distress, presence of downward lip corner pull*); 2 (*somewhat positive: i.e., no distress, absence of downward lip corner pull, or presence of a smile*); 1 (*positive: i.e., presence of positive vocalizations such as laughing*). These categories were subsequently divided into two groups: positive affect and negative affect. Negative affect was defined as when infants were seemingly distressed and positive affect was defined as when infants were seemingly not distressed, or were in a good mood. Although the terms positive and negative were used, the important difference between the two conditions was whether or not the infants were distressed. Crying is usually thought to be a reflection of discomfort or distress.

In addition, the two 60 s periods were divided into three 20 s time periods: initial; middle; and final, to facilitate further analysis. Segments in which the affect was not apparent due to inability to see the infant's face, were not included in the coding. The proportion of codable parts of all segments was 84.07% for infant M, and 83.33% for infant R. All segments were coded by the first coder, and a randomly selected ten percent were coded by a second coder. The percentage of inter-coder agreement was 93.60%.

### 2.4. Other measures

#### 2.4.1. Direction of infant gaze

To examine the relationship between infant affect and direction of gaze, in each 5 s segment of the 60 s before and after each crying episode, coding was performed with respect to the following behaviors: (a) looking at the mother; (b) looking at another person; (c) looking at the mother and another person; (d) not looking at anyone. These categories were then divided into two groups: looking at the mother and not looking at the mother, for further analysis.

This classification was performed by two coders independently observing video tapes with an inter-coder agreement of 96.00%.

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